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September 21, 2001

Magalie Roman Salas, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

RECEIVED

SEP 21 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Attention: **Patrick Forster, Senior Engineer (3-A104)**
Policy Division
Wireless Telecommunications Bureau

Re: **Adams Telcom, Inc./TMP Corp.**
Implementation Plans of Wireless E911 Phase II Automatic
Location Identification
CC Docket No. 94-102

REVISION TO E911 PHASE II IMPLEMENTATION REPORT

Dear Ms. Salas:

Adams Telcom, Inc. ("Adams") and its affiliated company, TMP Corp. ("TMP"), by its attorneys and pursuant to Section 20.18(i) of the Commission's Rules,[1] hereby report the revision of the E911 Phase II Implementation Report filed on November 9, 2000 to specify that TMP Corp. will utilize a hybrid ALI technology.[2]

I.   Background

When the initial E911 Phase II Implementation Report was filed for the subject license, Adams was the licensee of PCS C Block license (Call Sign WPOJ686). Subsequently, the authorization has been transferred to Adam's affiliated company, TMP.

TMP's PCS license covers the Quincy, Illinois BTA (Market No. B367). TMP has chosen to implement GSM technology in its network and plans to begin offering wireless service

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[1]   47 C.F.R. §20.18(i).

[2]   A facsimile copy of a Declaration by an authorized company representative attesting to the accuracy of this report is attached. A supplemental filing will be made after the original has been received.

on a commercial basis in November 2001.[3] To date, TMP has not received a Phase II request from a PSAP that is capable of receiving and utilizing the data elements and has a mechanism in place for recovering the PSAP's costs.

II.   E911 Phase II Implementation Plans

TMP has made a diligent search to identify a network-based, handset-based or hybrid E911 Phase II solution that meet the FCC's requirements[4] and has determined that for its GSM network, a hybrid solution utilizing Enhanced Observed Time Difference ("E-OTD") technology is the only viable option.[5]

E-OTD is a hybrid solution that determines location position through the combined use of handset-based and network-based technology. TMP has obtained information from its PCS vendor, Airnet, regarding the particular E-OTD solution that it plans to offer to its customers which is the Enhanced Observed Time Difference circular (E-OTD-C) positioning method (see attachment 1). This method requires handsets to provide measurement data to the Serving Mobile Location Center ("SMLC") in the network to calculate the location information. According to Airnet, the handset may require a software upgrade to perform this function.

Airnet plans to have the network component available during the first half of 2002. TMP will continue to monitor the development of the network components in the event it receives a PSAP request.[6]

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[3]   Because TMP has not yet initiated service, it does not have a TRS number. TMP is applying for a TRS number in anticipation of initiation of service and will notify the Commission when it receives the number.

[4]   TMP contacted its switch vendor, Tecore and its PCS vendor, Airnet, regrading possible solutions as well as several vendors including Cambridge Positioning Systems, Grayson Wireless, SnapTrack, Nortel, Nokia, Cell-Loc, Tendler Cellular and TCS/Xypoint.

[5]   *See In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems: Fourth Memorandum Opinion and Order*, 15 FCC Rcd 17442, 17461-62 (2000) (Commission noting that the E-OTD approach may be one of the only ALI solutions available in the near term for GSM systems); Request for Waiver made by Cingular Wireless LLC, filed on July 6, 2001 at 17 (Cingular noting that it and "virtually every other GSM carrier has indicated that it plans on deploying E-OTD").

[6]   *See In the Matter of Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems: Third Report and Order*, 14 FCC Rcd 17388, 17411 (1999) ("[t]o the extent that hybrid ALI approaches are deployed, any non-handset based equipment or operations that are needed should be in place when the PSAP has satisfied the applicable conditions and is ready to use ALI information. This requirement is identical to those that we apply to purely network-based technologies and subject to the same conditions").

TMP is seeking to identify handset vendors as to the availability of E-OTD compatible handsets. When it initiates service, TMP plans to sell primarily Nokia phones. TMP has contacted Nokia's corporate office and engineering department and was unable to locate anyone who had knowledge of whether Nokia will produce E-OTD compatible handsets. However, according to the leading E-OTD technology developer, Cambridge Positioning Systems, "[l]eading handset producers have announced that GSM handsets produced after Q4 2001 will be E-OTD compatible."[7] Accordingly, prior to initiating service, TMP may need to file a waiver request with the Commission specifying an extended implementation plan if it is unable to identify manufacturers that produce E-OTD compatible phones.

Respectfully submitted,

Sylvia Lesse
John Kuykendall

Counsel For
ADAMS TELCOM, INC.
TMP CORP

cc: Qualex International (diskette)

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[7]   *See* attached press release from Cambridge Positioning Systems (Attachment 2).

A I R N E T   *Feature Planning Bulletin*

Distribute To:	North American Customers
Pertains To:	Location Services (LCS)
Date:	September 2001

The following advance planner summarizes the delivery of major North American BSS software features and associated programs. Specifically:

- *Wireless E-911 Phase II Support for Public Safety-BSS*
- *Enhanced Location Services Support for Revenue Generation-BSS*
- *Third-party network elements support - Hardware, Software and Integration*
  - *GMLC*
  - *SMLC*
  - *LMU*
  - *Handset enabling software*
- *Associated Subscription Services*
  - *PSAP boundary updates*

This is part of our continued commitment to provide as much planning information as possible to our customers in order to make informed investment decisions.

	Available: Planned H1'02, Release to be determined	Notes: Optional software packages. Third-party element hardware and software – extra.

The objective of this feature is to ensure that AirNet GSM system operators have the ability to achieve cost-effective and meet/exceed compliance if possible in order to satisfy demand for greater public safety and regulatory directives. The purpose of this document is not to review the regulatory situation, or to analyze various courses of action, but to outline the current AirNet network enabling functions to sat isfy these requirements on behalf of the network operator. It is important to note that the AirNet solution, as does any Wireless E911 Phase II solution, relies heavily on the implementation of new GSM network elements and methods under the domain of third-party vendors. The selection, pricing, timing and the extent that these vendors comply with these standards is still being determined at the time of writing of this document.

As is well documented in the trade press and FCC resources, wireless carriers are required to provide Automatic Location Identification (ALI) as part of Phase II E-911 implementation beginning October 1, 2001. Originally, the FCC's rules envisioned that carriers would need to deploy network-based technologies to provide ALI. In the past several years, there have been significant advances in location technologies that employ new or upgraded handsets. In September 1999, the FCC revised its rules to better enable carriers to use handset-based location technologies to meet the Phase II requirements. In particular, the FCC established separate accuracy requirements and deployment schedules for network-based and handset-based technologies (see Table 1). In August 2000, the FCC made minor adjustments to the deployment schedule for handset-based technologies. In line with the majority of the GSM community, AirNet proposes a hybrid solution.

Solution	*Requirement*	*Comment*
For network-based solutions	100 meters for 67 percent of calls, 300 meters for 95 percent of calls	1 Meter = 3.281 Feet
For handset-based solutions	50 meters for 67 percent of calls, 150 meters for 95 percent of calls	1 Meter = 3.281 Feet

Table 1: Accuracy Requirements

Architecture Overview:
The LCS functionality as it relates to the overall AirNet GSM system is best depicted in a Logical Architecture diagram. LCS is logically implemented on the GSM structure through the addition of one network node, the Mobile Location Center (MLC). It is necessary to identify a number of new interfaces to integrate the MLC in support of LCS. A generic LCS logical architecture is shown in figure 1. The LCS generic architecture can be combined to produce several LCS architecture variants, depending on engineering approach. No inference should be drawn about the physical configuration on an interface from Figure 1. AirNet's support of various approaches for implementation, and options for operators, will be discussed in later sections.
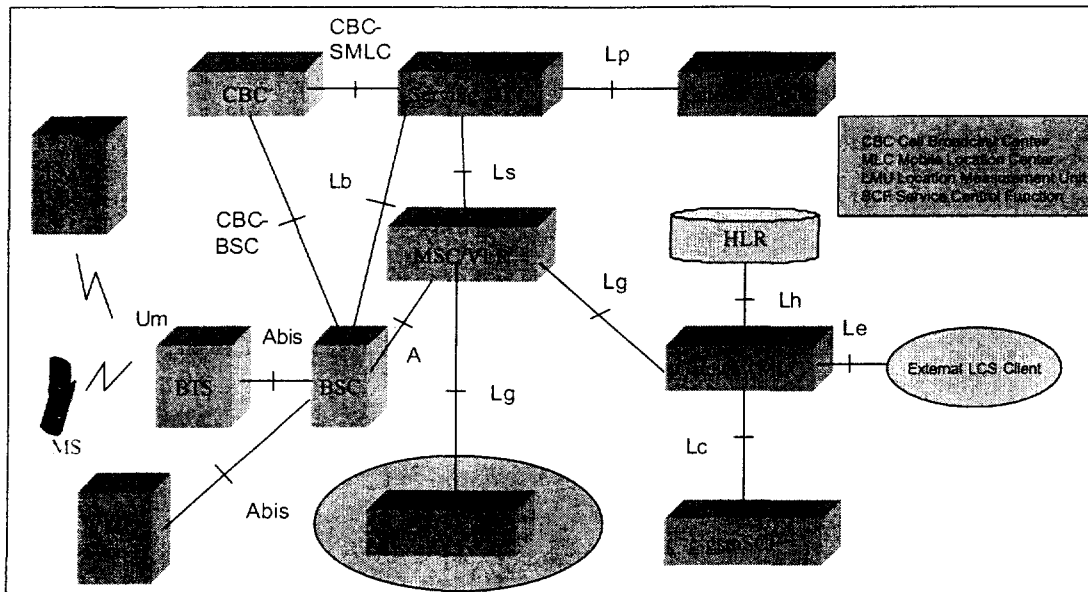
Figure 1: Generic LCS Logical Architecture

E-OTD Implementation

Enhanced Observed Time Difference (E-OTD) is a hybrid solution that determines location position through combined use of handset-based and network-based technology. E-OTD location calculation receives signals from fixed measuring points known as the Location Measurement Units (LMUs) whose locations are known. The position of the MS is determined by measuring the time delays to an MS from the BTSs as well as the LMUs to the BTSs. To obtain accurate triangulation, OTD measurements and Real Time Difference (RTD) measurements are needed for at least three geographically distinct BTSs. Based on the measured OTD values, the location of the MS will be calculated in the network. With the same network architecture, MS functions, LMU functions and measurement inputs the calculation of the handset position can be based on one of two possible types of location calculation; known as 'hyperbolic' (E-OTD-H) and 'circular' (E-OTD-C). AirNet plans to implement the Enhanced Observed Time Difference circular (E-OTD-C) positioning method. This method requires the handset to provide measurement data to the SMLC to calculate the location information. The handset may require a software upgrade to perform this function but handset replacement is not anticipated.

EOTD supports two types of LMU's; Type A which communicates with the network over the air to a BTS, and Type B which communicates with the network over an A-bis interface to the BSC. AirNet plans to support the Type A LMU only.

EOTD also supports two network solutions; the BSS solution where the SMLC communicates directly with each BSC, and the NSS-based solution where the SMLC incorporates the MSC to concentrate traffic from multiple BSCs. AirNet plans to support the NSS-based solution initially.
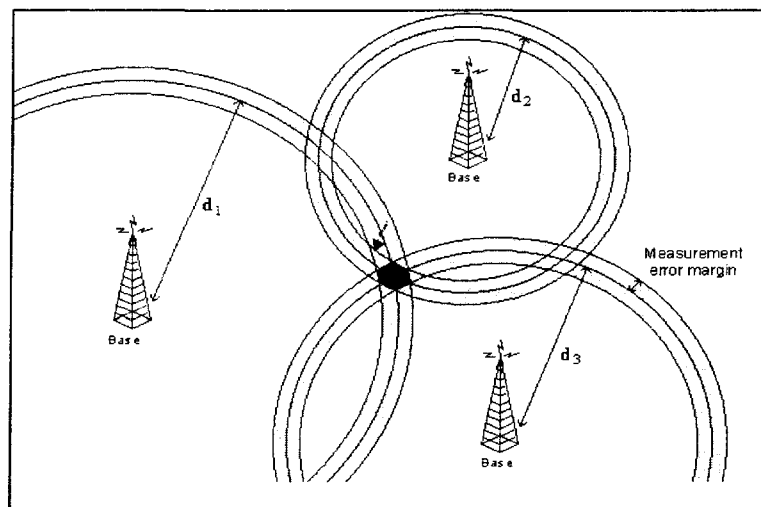

Figure 2: E-OTD location (circular)

AirNet is not planning to support the EOTD-Hyperbolic method at this time.

GPS based methods:

Global Positioning System (GPS) provides a means to determine position, velocity, and time around the globe. GPS uses satellites emitting radio signals to the receiver to determine the position of the handset. A-GPS (Assisted GPS) provides for an established GPS reference network to be connected with the GSM network. At the request of an MS, the assistance data from the reference network is transmitted to the MS to increase performance of the GPS sensor. When the position is calculated at the network, it is a mobile-assisted solution. When the position is calculated at the handset, it is a mobile-based solution.

There are three different solutions for this method. In all cases, a network GPS reference would be required to enhance the handset location performance.

- Assisted GPS: a GPS reference signal will provide the initial data (Time to First Fix or TTFF) for the GPS sensor in the handset to lock on to a GPS satellite faster. It may also provide the differential GPS data to enhance accuracy of the handset GPS sensor.
- MS assisted GPS: this solution shifts most of the GPS function into the network and the network broadcast the necessary data to the handset for quick GPS calculation by the handset.
- MS-based GPS: this solution requires full GPS receiver in the handset for location calculation. Again, broadcast GPS information is necessary to improve the GPS receiver performance and reduce battery drain.

AirNet may make available A -GPS may be offered as a complementary or optional capability to the E-OTD location capability in the future.

Related Features/Feature Dependency:
AirNet LCS solution will include the following incremental elements, that will be described in more detail in later sections:
- SMLC
- GMLC
- LMU type B
- Cell Broadcast Center
- Handset with software

The Cell Broadcast Center (CBC) is used for broadcasting assisted location information so that the handset -based solution can fix its location faster with fewer GPS satellites. This is an optional element, not mandatory to Location Services functionality, and may be integrated into the base station system at a later release.

All AirNet solutions will require an SMLC and a GMLC as mandatory components per system.

Budgetary Pricing:

Available upon request.

	Available: Planned H1'02	Notes: GSM E-911 and Location Services rely on the SMLC

The SMLC (Serving Mobile Location Center) provides signaling to and from the handset and the Gateway MLC via the MSC/VLR. In network-based solutions, it will also compute the location coordinates from the available measurement data sent in by the handsets and provides billing function.

Budgetary Pricing:

Available upon request.

Associated Hardware and Software:

LMU

The Location Management Unit provides the necessary reference measurements for the position calculations by the SMLC. The LMU is required for a network-based solution. One LMU per base station is required.

Budgetary Pricing:

Available upon request.

	Available: Planned H1'02	Notes: GSM E-911 and Location Services rely on the GMLC

The GMLC (Serving Mobile Location Center) provides connectivity to the location application such as the PSAP and other location applications (e.g. an IN service in a SCP).

Budgetary Pricing:

Available upon request.

Associated Subscription Service:

Operators are advised that PSAP boundaries are subject to change, and that current boundary information for US located PSAPs is available from a number of third-party mapping services, including:

Public Safety Associates, Inc.
4545 Fuller Drive, Suite 416
Irving,TX 75038
Voice: 972.791.0911
Fax: 972.717.9099

http://www.psadallas.com/

Contacts:
Please contact your AirNet account manager for details about purchasing this new feature. You can also contact AirNet Product Marketing at (321)984-1990, or email: bcalder@airnetcom.com.

Attachment - 2

CPS announces industry wide endorsement of E-OTD technology

All major US GSM carriers opt for E-OTD to meet FCC E911 mandate

London, 18 July, 2001: Cambridge Positioning Systems Limited (CPS), the world's leading provider of mobile location technology systems, announced at the company's annual Industry Analyst Meetings that E-OTD (Enhanced Observed Time Difference) has now been selected by all major US GSM mobile operators as their technology of choice for compliance with the impending US emergency services legislation, known as E911.

VoiceStream was the first US GSM operator to opt for CPS' E-OTD technology, and the companies have been working closely together for over a year at a trial network site in Houston, Texas. A second reference network is being commissioned in Washington DC.

AT&T Wireless Services also selected E-OTD as their preferred location technology and has announced implementation plans across its entire GSM network. This month's submission to the FCC by Cingular, another leading US GSM operator, announcing that they will also include E-OTD technology in their networks to meet the conditions of E911, means that this leading technology has been embraced industry-wide by all major GSM operators announcing their intention to meet the FCC's mandate.

E-OTD technology offers fast, cost-effective deployment and can achieve location accuracies to 50 metres. Leading handset providers have announced that GSM handsets produced after Q4 2001 will be E-OTD compatible. CPS is working with, or has licensed its E-OTD technology to, most of the network infrastructure providers, including Ericsson, Lucent Technologies, Nortel Networks and Siemens.

"The latest announcement by Cingular and the adoption of E-OTD technology by all major US GSM carriers as the location enabler of choice for their wireless networks is good news," said Chris Wade, CEO, CPS. "We are achieving increased market awareness and adoption through our strategic partners and network equipment vendors. They, along with the mobile operators and terminal manufacturers, are all recognising the opportunities high accuracy location services provide to enhance their revenues and differentiate themselves in the eyes of their customers. At our annual Analyst meetings we have announced major developments to our product set which will dramatically decrease the cost of introduction of **Cursor™** technology and outlined our UMTS plans." he added.

Commenting at the end of the Analyst events, Jamie Moss, Telecommunications Consultant, Strategis Group, said: "The ease of adoption and distribution of any new wireless technology will always be of crucial importance to any mobile operator. E-OTD's ability to be quickly and cheaply integrated and distributed en masse, requiring zero additional investment on the part of the end user, has allowed the technology to triumph over A-GPS for the US GSM market. CPS' involvement and success to date in the USA sets them in good stead for future relationships with European operators."

Cambridge Positioning Systems (CPS) provides world-leading location technology and services for both the corporate and consumer mobile markets. It is currently partnering a wide range of organisations to introduce value-added location based services and its strategic partners include network equipment and handset manufacturers and software application vendors. For further information, visit
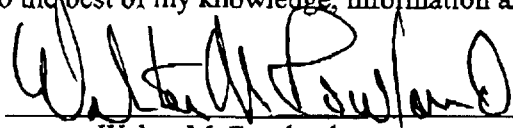
For further information, please contact:

Cambridge Positioning Systems Limited
Jane Windsor
Communications Director
Tel: +44 (0) 1223 326 984
Email:

Cursor™ is a registered trademark

DECLARATION OF WALTER M. ROWLAND

I, Walter M. Rowland, President of TMP Corp., do hereby declare under penalty of perjury that I have read the foregoing Revision to E911 Phase II Implementation Report and that the facts stated therein are true and correct, to the best of my knowledge, information and belief.

_____
Walter M. Rowland

Dated: September 21, 2001